

Accepted Manuscript

Title: The impact of natural ageing on the hydrothermal stability of new and artificially aged parchment and leather samples

Authors: Andrei Cucos, Petru Budrugaec

PII: S0040-6031(18)30757-3
DOI: <https://doi.org/10.1016/j.tca.2018.09.006>
Reference: TCA 78090

To appear in: *Thermochimica Acta*

Received date: 30-3-2018
Revised date: 3-9-2018
Accepted date: 6-9-2018



Please cite this article as: Cucos A, Budrugaec P, The impact of natural ageing on the hydrothermal stability of new and artificially aged parchment and leather samples, *Thermochimica Acta* (2018), <https://doi.org/10.1016/j.tca.2018.09.006>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

The impact of natural ageing on the hydrothermal stability of new and artificially aged parchment and leather samples

Andrei Cucos*, Petru Budrugaec

*National Institute for Research and Development in Electrical Engineering ICPE-CA,
Splaiul Unirii 313, 030138 Bucharest, Romania*

*Corresponding author. Tel.: +40 21 3468298; fax: +40 21 3468299.

E-mail address: andrei.cucos@icpe-ca.ro (A. Cucos)

Highlights

- New and accelerated aged parchments and leathers were naturally aged for 4 years
- The effect of natural ageing was assessed by the denaturation temperature T_d
- For parchments the largest decrease of T_d was observed for the new samples
- For the strongly accelerated aged parchments the temperature shift was negligible
- For leathers the shift of T_d was unrelated to the previous accelerated ageing time

Abstract

The paper discusses the effects of a 4-year natural ageing on hydrothermal stability of new and previously accelerated aged parchments and leathers. It was observed that natural ageing generally lowers the denaturation temperature (measured using DSC), but in a different way for the two types of these collagen-based materials. Thus, for parchments the largest effect (up to 7 °C) was observed for the new samples, while for the strongly aged ones the temperature shift was negligible. For leathers, no relevant dependence of the denaturation temperature shift (3.0 ± 1.0 °C in average) with the previous accelerated ageing time was observed. For parchment, the enthalpy of denaturation decreases substantially following natural ageing, while for leathers no significant alteration was observed. It was also found that the 1-day accelerated ageing performed in 2013 had comparable effects on the denaturation temperature of these materials as the 4-year natural ageing, making the possibility of predicting the effects of natural ageing on patrimonial artifacts manufactured from parchment and leather.

Download English Version:

<https://daneshyari.com/en/article/10152067>

Download Persian Version:

<https://daneshyari.com/article/10152067>

[Daneshyari.com](https://daneshyari.com)